

Bhoj Reddy Engineering College for Women: Hyderabad
Department of Electrical and Electronics Engineering
Lesson plan of faculty member for the academic year 2017-18
 Class: III B Tech Branch-Section: EEE Semester: I
 Subject: Power Electronics (PE) Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I : Power Semi-Conductor Devices And Commutation Circuits		
1	Introduction to Power electronics BJT, Power MOSFET Characteristics	13 July 2017
2	Power IGBT Characteristics, Numerical problems	14 July 2017
3	Other members of Thyristor family and their characteristics	15 July 2017
4	Tutorial(G2,G1,G3)-Problems on BJT	13,14,15 July 2017
5	Basic theory of operation of SCR and static characteristics	20 July 2017
6	Salient points of SCR operation and two transistor analogy; Problems	21 July 2017
7	Turn on methods of SCR and turn off methods	22 July 2017
8	Tutorial(G2,G1,G3)-Problems on Two transistor analogy	20,21,23 July 2017
9	Two transistor analogy SCR-UJT firing circuits	24 July 2017
10	SCR Dynamic characteristics of SCR – turn on & turn off times	27 July 2017
11	Series and parallel connection of SCRs;	28 July 2017
12	Specifications and ratings of SCR,BJT,IGBT	29 July 2017
13	Tutorial(G3,G1,G2)-Problems on Snubber circuit	27,28,29 July 2017
14	Problems in snubber circuit design	31 July 2017
16	Snubber circuit details and design of snubber	3 August 2017
17	Line commutation and forced commutation circuits; Numerical problems	4 August 2017
UNIT – II : AC-DC Converters(1-Phase & 3-Phase Controlled Rectifiers)		
18	Phase control technique of line commutated converter	5 August 2017
19	Tutorial(G2,G1,G3)-Problems on Phase control technique	3,4,5 August 2017
20	1 phase midpoint and bridge connections of converters	7 August 2017
21	Single phase half controlled converter with R, RL and RLE Load derivation of average voltage and average current.	10 August 2017
22	Derivation of average voltage and average current; Numerical problems	11 August 2017
23	Active and Reactive power inputs to the converters without and with freewheeling Diode	12 August 2017
24	Tutorial(G2,G1,G3)-Problems on Single phase fully controlled converters	10,11,12 August 2017
25	Single phase fully controlled converters, Mid-point and Bridge connections with R,RL load and RLE load	17 August 2017
26	Derivation of average load voltage and current	18 August 2017
27	Line commutated inverters; Numerical problems	19 August 2017
28	Tutorial(G2,G1,G3)-Problems on Active and reactive power of a Converters	17,18,19 August 2017
29	Derivation of load voltage and current	21 August 2017
30	Active and reactive power inputs to the converters without and with freewheeling Diode, Effect of source inductance	24 August 2017
31	Three phase three pulse , six pulse converters	26 August 2017

32	Tutorial(G3,G2)-Problems on Effect of source inductance	24,26 August 2017
33	Three phase half controlled converter with R,RL load Derivations of average load voltage	28 August 2017
34	Effect of source inductance; Dual converters (both single phase and three phase) wave forms	31 August 2017
35	Three phase midpoint and bridge connections; Numerical problems on three phase and single phase converter	1 September 2017
UNIT – III : DC-DC Converters(Choppers)		
36	Tutorial(G2,G1)-Problems on step up chopper	31 August,1 September 2017
37	Step up/down chopper, Derivation of load voltage and current with R, RL, RLE loads; Numerical problems	4 September 2017
38	Load expression of step up chopper;	9 September 2017
39	Tutorial(G3)-Problems on step up chopper	9 September 2017
40	Principle of operation of Morgan's chopper, Time ratio control & current limit control strategies	11 September 2017
41	Jones chopper and Oscillation chopper	14 September 2017
42	AC Chopper, Voltage commutated chopper and Current commutated chopper with waveforms	15 September 2017
43	Single phase Ac voltage controllers two SCR's in anti-parallel with R and RL loads; Numerical problems	16 September 2017
UNIT – IV : AC-AC Converters(Ac Voltage Controllers) & Frequency Changers(Cyclo-Converters)		
44	Tutorial(G2,G1,G3)-Problems on AC Chopper	14,15,16 September 2017
45	Operation of TRIAC with R and RL loads	18 September 2017
46	Derivation of RMS load voltage , RMS current and Power Factor	21 September 2017
47	Single phase midpoint cyclo converter with R-L load	22 September 2017
48	Single phase midpoint cyclo converter with R load ; Numerical problems	23 September 2017
49	Tutorial(G2,G1,G3)-Problems on Power Factor	21,22,23 September 2017
50	Bridge configuration of single phase cyclo-converter(principle of operation only)	5 October 2017
51	Firing circuits Basic parallel capacitor inverter	6 October 2017
52	Numerical problems	7 October 2017
UNIT – V : DC-AC Converters(Inverters)		
53	Tutorial(G2,G1,G3)-Problems on Capacitor Inverter	5,6,7 October 2017
54	Single phase basic series inverter	9 October 2017
55	Single phase basic parallel inverter	12 October 2017
56	Bed ford inverter	13 October 2017
57	Introduction to Mc Murray- Mc Murray inverter	14 October 2017
58	Tutorial(G2,G1,G3)-Problems on Parallel Inverter	12,13,14 October 2017
59	Operation of Mc Murray- Mc Murray inverter, Numerical problems	16 October 2017
60	Pulse width modulation techniques	19 October 2017
61	Numerical problems	20 October 2017
62	Voltage control techniques for inverters	21 October 2017
63	Tutorial(G2,G1,G3)-Problems on Series Inverter	19,20,21 October 2017
64	Three phase inverters() degrees conduction modes of operation	23 October 2017
65	Problems on Voltage control Techniques	26 October 2017
66	Revision of unit I	27 October 2017

67	Assessment of class test performance	28 October 2017
68	Tutorial(G2,G1,G3)-Problems on PWM Techniques	26,27,28 October 2017
69	Revision of unit II	30 October 2017
70	Assessment of class test performance	2 November 2017
71	Revision of unit III	3 November 2017
72	Tutorial(G2,G1)-Problems on Cyclo converter	2,3 November 2017
73	Revision of unit IV	6 November 2017

Text Books:

1. Power Electronics–M.D.Singh & K.B.Kanchandhani,Tata Mc Graw–Hill Publishing Company, 1998.
2. Power Electronics Devices, Circuits and Industrial Applications-V.R.Moorthi,Oxford University Press.
3. Power Electronics – Vedam Subramanyam, New Age International (P) Limited, Publishers.
4. Thyristorised Power Controllers – G.K.Dubey, S.R.Doradra, A Joshi and R.M. Sinha, New Age International (P) Limited Publishers, 1996.
5. Power Electronics – P.C.Sen, Tata Mc Graw-Hill Publishing.

Name and signature of the faculty: SK Vali ----

Name and signature of Head of the Department: S Deepti ----